

Flight Scientist Report
Friday 03/11/2020 ACTIVATE RF20

Flight Type: Statistical Survey Flight – Clouds

Flight Route: ZIBUT – out east south east

Special Notes: Flight plan was set to go as far east towards the front that was forecasted. The front slowed considerably during the flight from the forecast and therefore overlapped significantly with the flight path. The front had strong convective storms along the flight path with sigmets in the region. Therefore the flight plan was changed based on observations from the UC12 to head south - south west along the front along a line of shallow convective cloud line. The plan was modified to pick several waypoints and requested by the pilots realtime and was coordinated between both planes that resulted in a bowtie pattern. The coordination with the two planes was exceptional during most of the flight. There was significant structure in the aerosol data products and had much higher concentrations than along the eastern leg out to the cold front. There was a lesson learned that someone on the ground monitoring the flight should consider conditions that would require changes to the flight further in advance if possible. The going in plan was to go to the front and turn around but would have limited the data sampling considerably in this case. In addition, it was requested to have the UC12 take off earlier than the HU25 to get to altitude to sample the cloud field near the coast line. The plan was to give the UC12 to climb before heading east off the coast. This resulted in the UC12 getting held by ATC at 9kft and limited the effectiveness of the plan. The lesson learned is to have the UC12 head east first and then ask for a delay or to spiral up when flying out of KLFI due to aircraft traffic being much less.

It was noted in the post flight brief that the changes in the flight plan made it much more challenging to select altitudes real time during the flight. Another lesson learned is that there might need to be more guidance from the ground ops personnel in terms of the real-time altitude changes. The cloud scene is more evident when repeating the flight track.

King Air

- See notes above on flight plans. The door on the King Air had a similar issue as previous flight in that the door closed switch did not engage (light did not turn on in cockpit) until trying eight times. The door was also being worked on before the flight which resulted in a delay on takeoff.

Instruments:

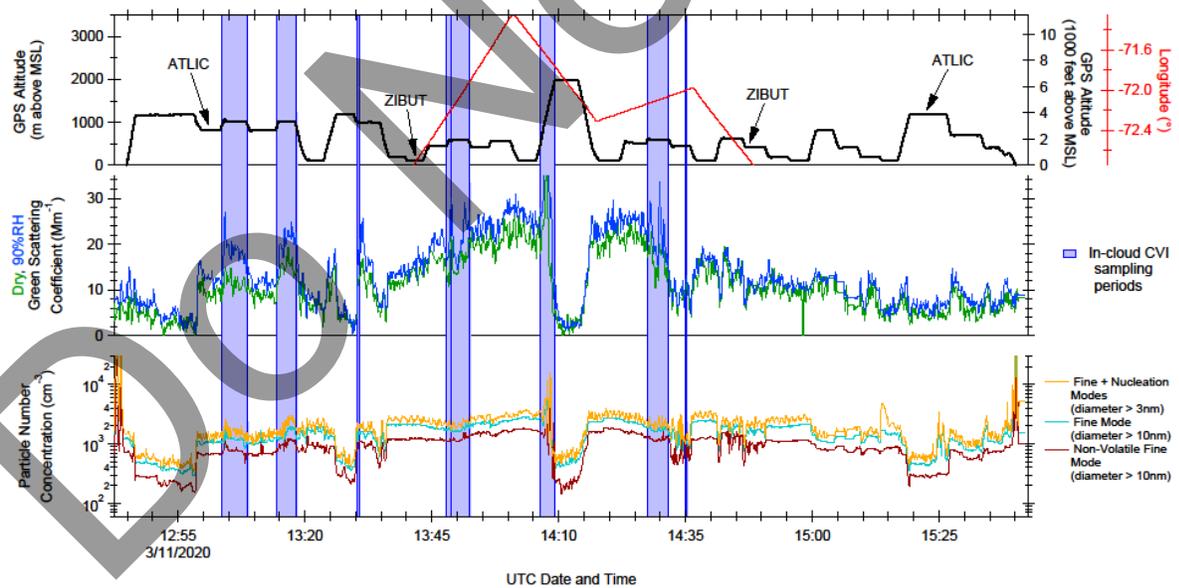
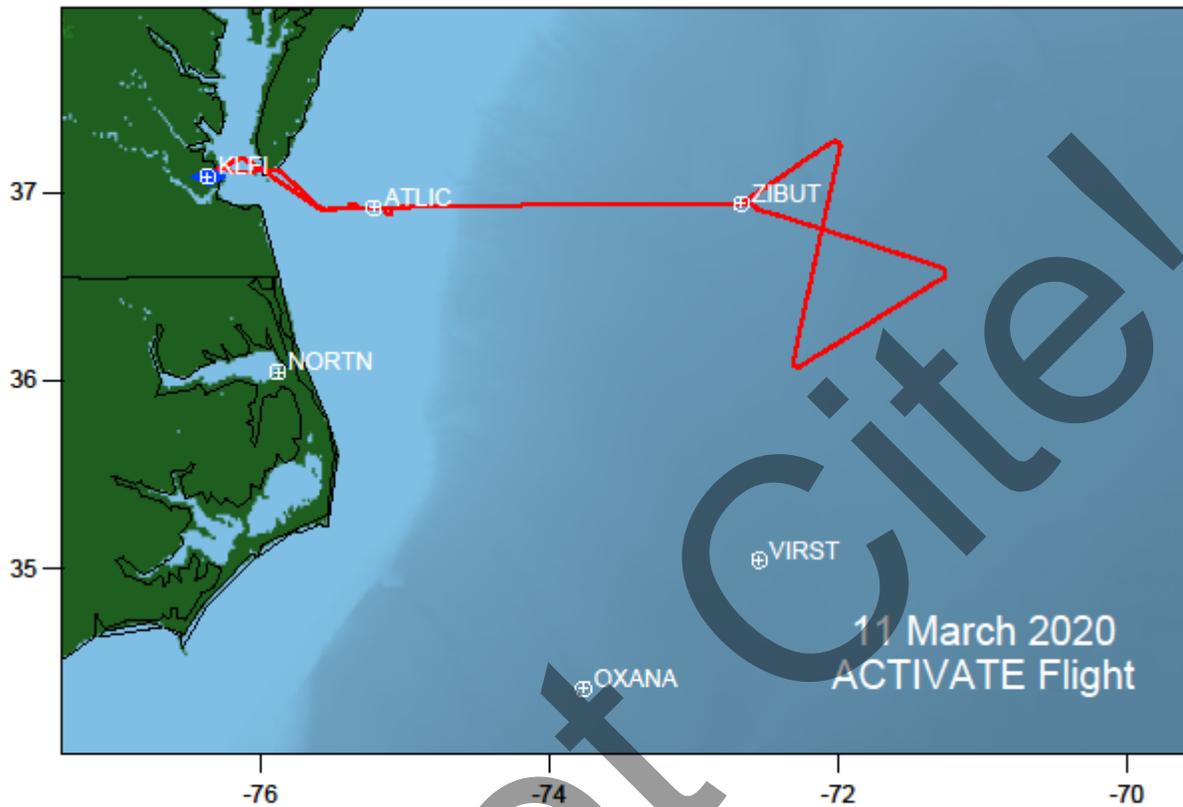
No reported issues.

Falcon

- The airbase (KLFI) required a FOD check on the runway right before take off due a Heavy aircraft landing, This is standard ops for the airfield for any large aircraft landing or taking off. This, in addition to the King Air door switch, resulted in a delayed take off.

Instruments: Power transition was good today. The AMS did have an orifice blocked during part of the flight which was noticed and corrected during flight. No other reported issues with the instruments..

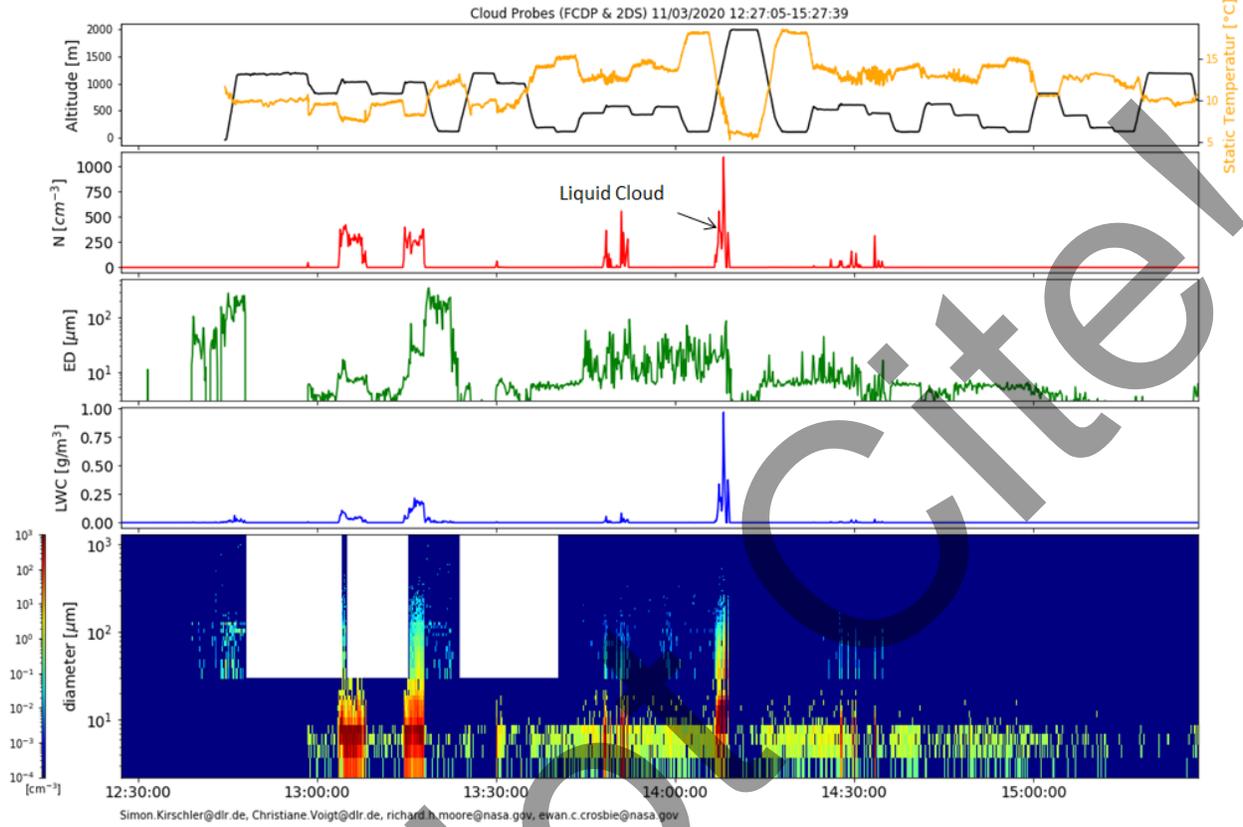
Rich Moore Quicklook Images:



Quicklook ACTIVATE Cloud Probes (FCDP & 2DS)

preliminary data, only for quicklook use

Simon Kirschler, Christiane Voigt, Richard Moore, Ewan Crosbie

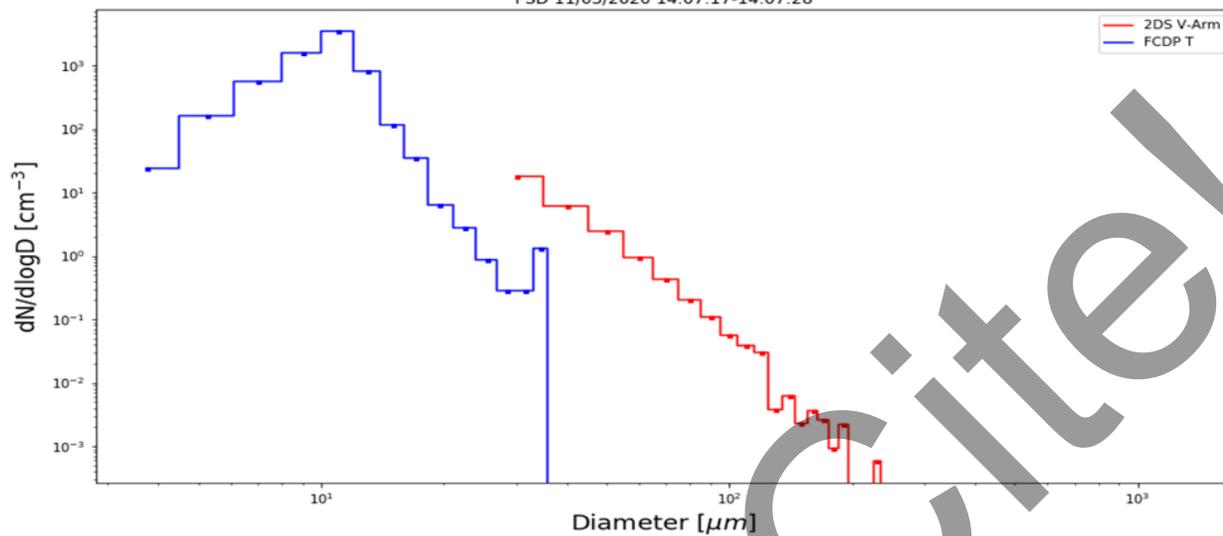


PSD ACTIVATE

preliminary data, only for quicklook use
Simon Kirschler, Christiane Voigt, Richard Moore, Ewan Crosbie



PSD 11/03/2020 14:07:17-14:07:28

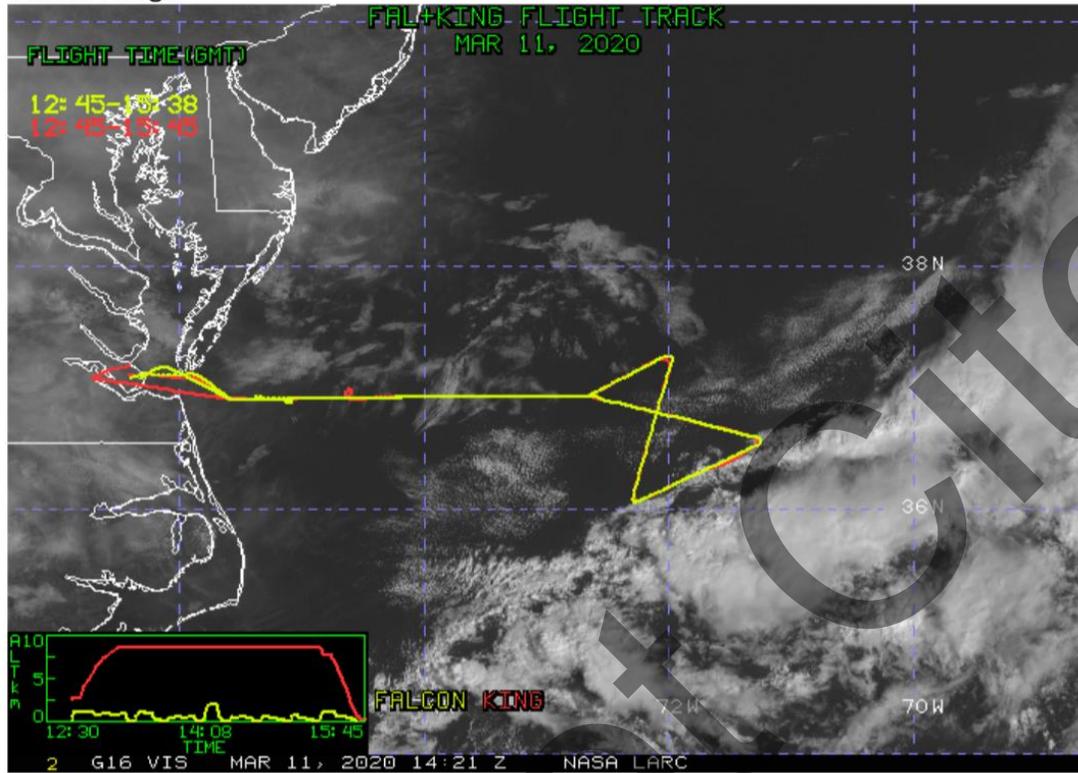


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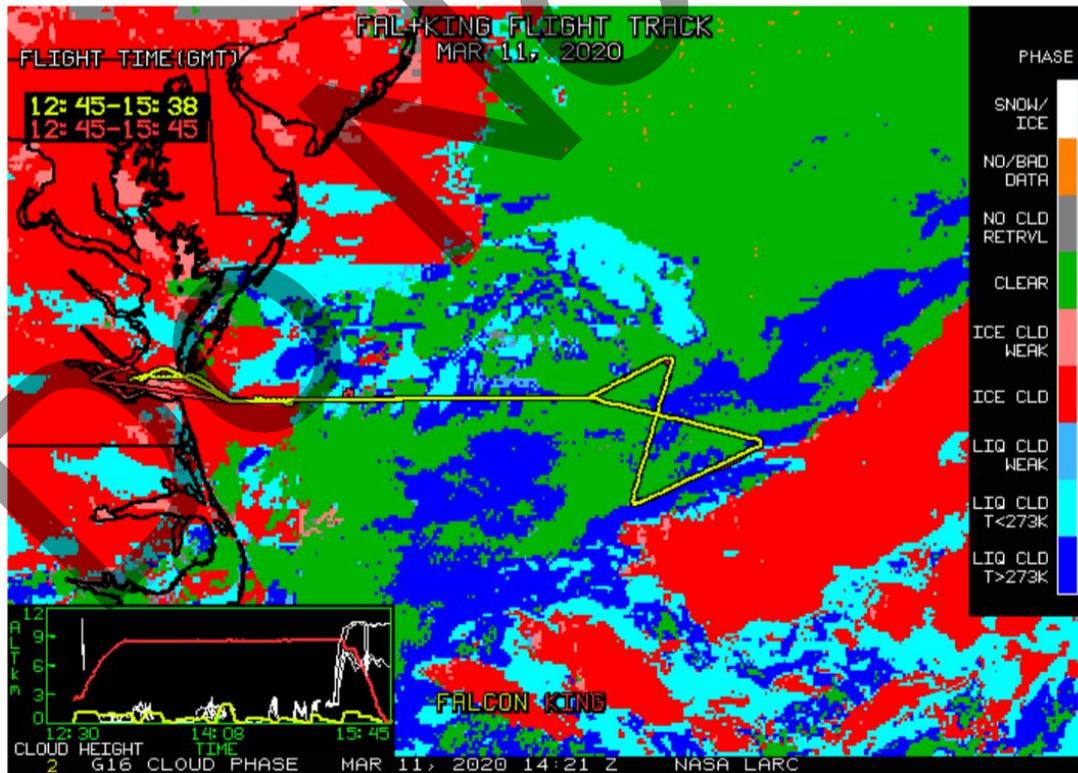
Liquid Cloud: 14:07:18



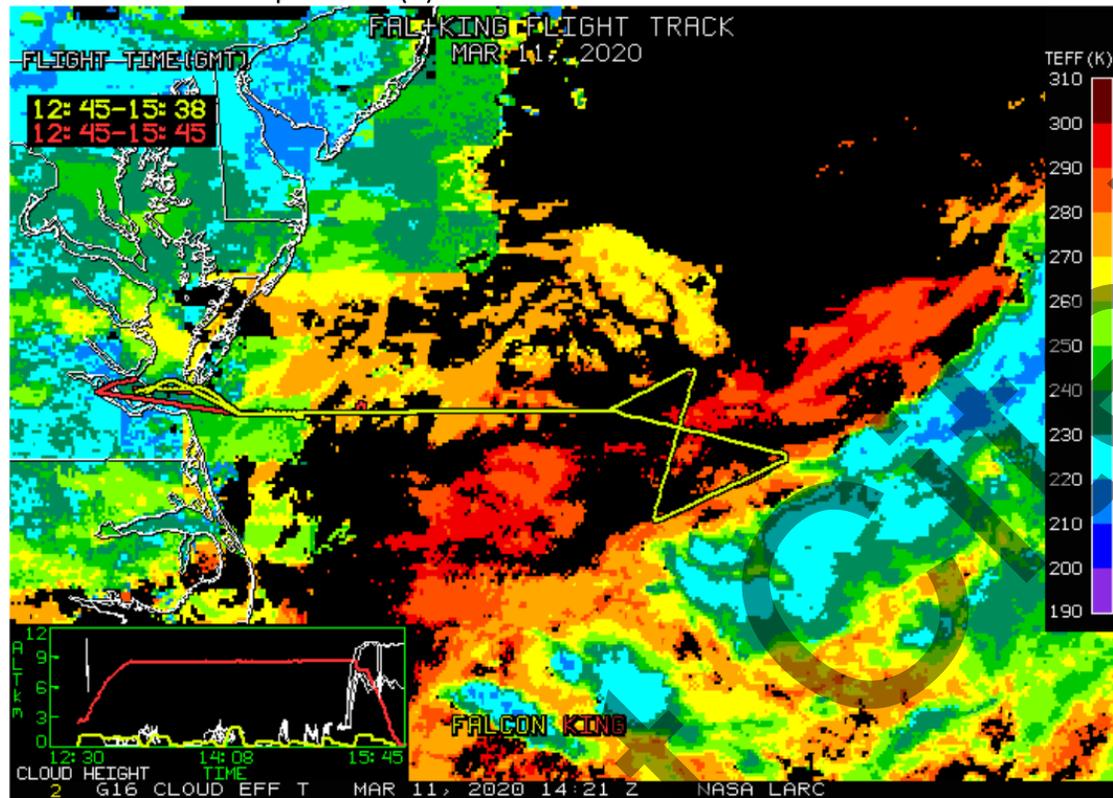
NASA-LaRC Clouds Group GOES-16 Quicklook Images for Flight 20, 14:21 UTC Mar 11, 2020
 (near middle of flight)
 Visible Image



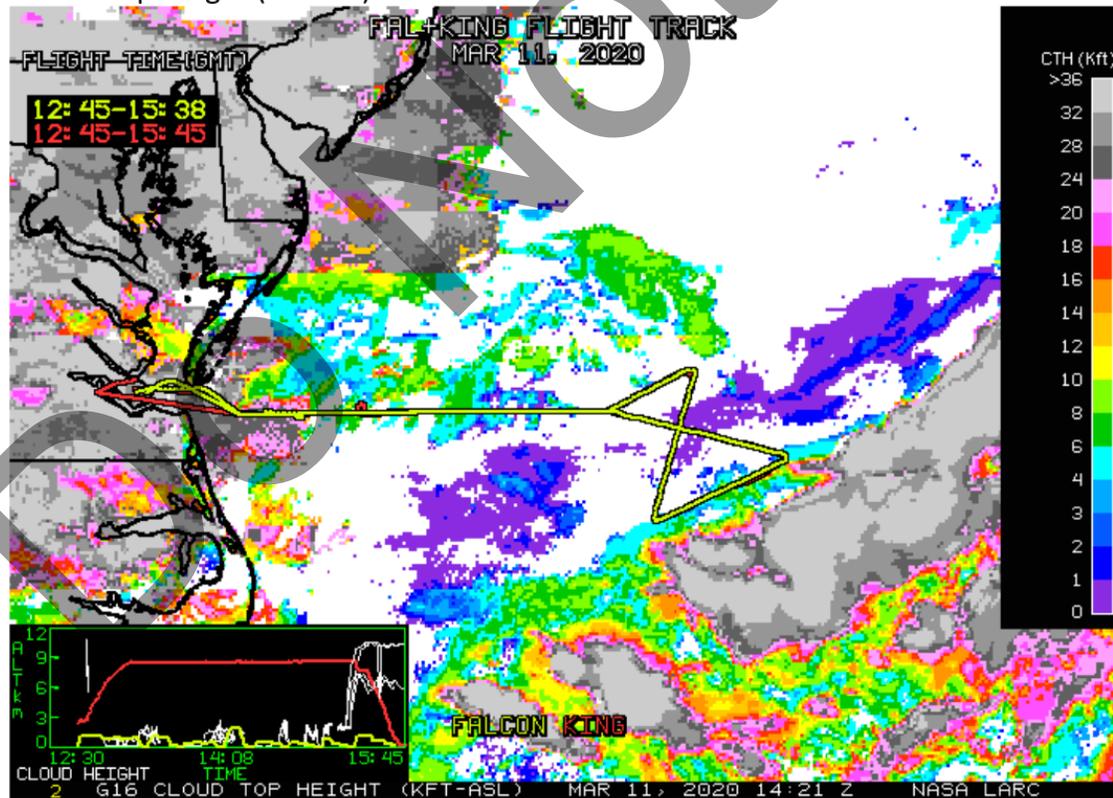
Cloud Phase



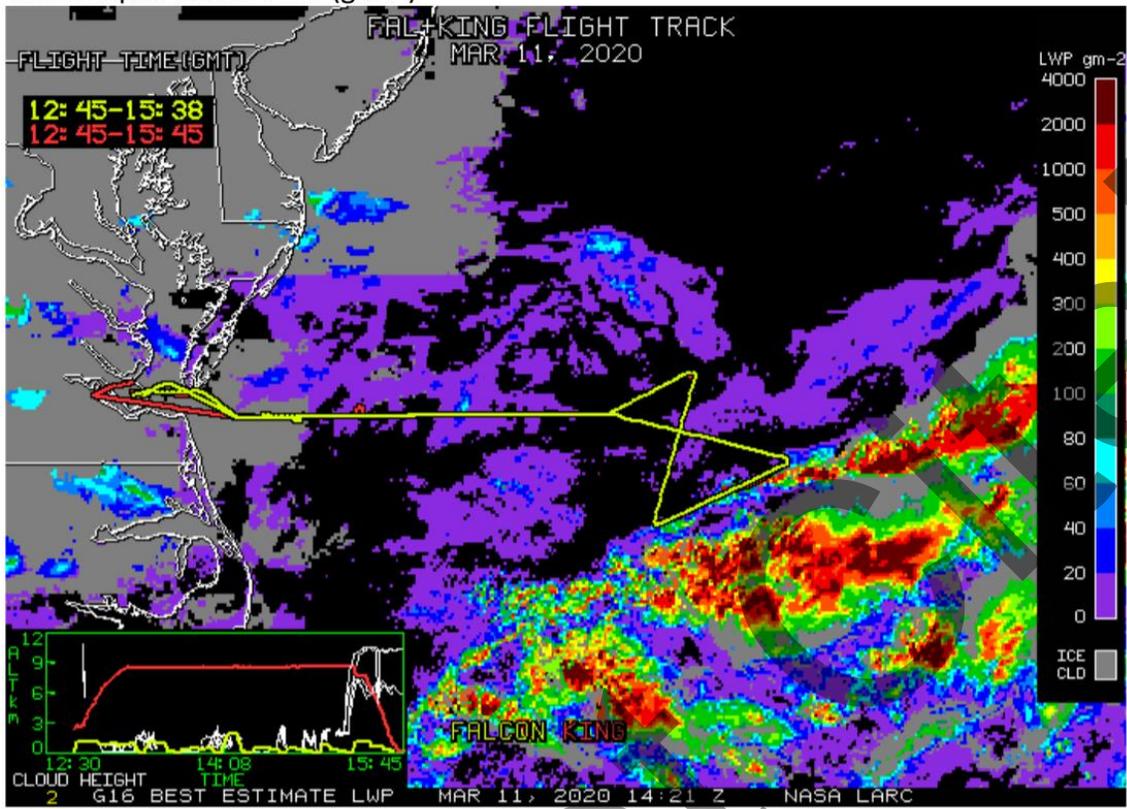
Cloud Effective Temperature (K)



Cloud-Top Height (Kft-ASL)



Cloud Liquid Water Path (gm^{-2})



Cloud Droplet Number Concentration (cm^{-3})

